

Claims

1. A base for a playing field comprising a layer of particulate material, said layer forming at least an upper part of the base, and a binder applied to the layer of particulate material, the binder extending from about 5 mm to about 150 mm into the layer of particulate material, the binder acting to bind at least the uppermost part of the layer of particulate material, said layer being porous to water such that water applied to a surface of the base flows through said layer.
2. A base for a playing field as claimed in claim 1 wherein the particulate material in the top layer is sized such that the particulates predominantly fall within the size range of 0.025 mm to 25 mm.
3. A base for a playing field as claimed in claim 3 wherein the particulate material in the top layer is sized such that the particulates predominantly fall within the size range of from 0.025 mm to 10 mm.
4. A base for a playing field as claimed in claim 3 wherein the particulate material is sized such that the particles predominantly are sized below 5 mm.
5. A base for a playing field as claimed in any one of the preceding claims wherein the particulate material is a crushed stone, a manufactured sand, a concrete crushed stone or a crusher dust.
6. A base for a playing field as claimed in any one of the preceding claims wherein the layer is laid directly onto an underlying concrete or asphalt base or is laid onto an underlying layer of particulate material.
7. A base for a playing field as claimed in claim 6 wherein the underlying layer of particulate material is a layer of graded particulate material having high permeability to water.
8. A base for a playing field as claimed in claim 7 wherein the underlying layer of particulate material comprises a graded layer having particles largely in the range of 7 mm to 22.5 mm.

9. A base for a playing field as claimed in claim 7 or claim 8 wherein, sub-surface drainage is incorporated beneath the top layer.
10. A base for a playing field as claimed in any one of claims 7 to 9 wherein a sub-layer has falls or slopes built-in during construction to enable water to run off the sub-layer.
- 5 11. A base for a playing field as claimed in any one of the preceding claims wherein the binder extends from about 5 mm to about 100 mm into the layer of particulate material.
12. A base for a playing field as claimed in claim 11 wherein the binder penetrates at least 10 mm into the layer of particulate material.
- 10 13. A base for a playing field as claimed in claim 12 wherein the binder penetrates from 20 mm to 25 mm into the layer of particulate material.
14. A base for a playing field as claimed in any one of the preceding claims wherein the binder comprises a silicate-based binder and further includes one or more setting agents.
- 15 15. A base for a playing field as claimed in claim 14 wherein the binder further includes one or more surfactants.
16. The binder is suitably applied to the layer of particulate material in the form of a liquid. The liquid may be a solution, an emulsion or a dispersion. The liquid binder desirably penetrates into the layer of particulate material to the desired degree before
20 it cures or sets. The liquid binder may have rheological properties that are controlled such that the binder can penetrate to the desired degree prior to setting. The liquid binder is suitably applied by spraying.
17. A method for forming a base for a playing field comprising the steps of forming a base having at least an upper layer of a particulate material sized such that the
25 particles predominantly fall within the size range of 0.025 mm to 10 mm and applying a liquid binder to the top layer such that the liquid binder penetrates a distance of from 5 mm to 100 mm into the top layer and sets to bind the particulate material in the top layer, wherein said top layer retains porosity to water.

18. A method as claimed in claim 17 wherein the liquid binder comprises a silicate-based binder.
19. A method as claimed in claim 18 wherein the silicate-based binder incorporates a silicate component and one or more setting agents.
- 5 20. A method as claimed in claim 19 wherein the binder comprises a first composition including the silicate component and a second composition including the one or more setting agents and the first composition and the second composition are mixed just prior to application of the binder to the top layer, or mixed as part of the application process for applying the binder to the top layer
- 10 21. A method as claimed in claim 20 wherein the second composition further includes one or more surfactants.
22. A method as claimed in any one of claims 17 to 21 wherein the liquid binder further includes a colouring agent so that an operator applying the binder can readily determine, by visual inspection, where the binder has been applied.
- 15 23. A method as claimed in any one of claims 17 to 22 wherein the liquid binder further includes one or more other components selected from biocides, fungicides, algacides, herbicides and pesticides.
24. A method as claimed in any one of claims 17 to 23 wherein the binder is applied to the layer of particulate material at an application rate of from 0.5 litre per square metre to 10 litres per square metre.
- 20 25. A method as claimed in claim 24 wherein the binder is applied to the layer of particulate material at an application rate of from 1 litre per square metre to 7 litres per square metre.
26. A binder composition for use in producing a base for a playing field comprising a silicate-based binder, at least one setting agent and a surfactant.
- 25 27. A binder composition as claimed in claim 26 wherein the binder composition comprises a first composition including the silicate-based component and a second composition including at least one setting agent and at least one surfactant, with the

first composition and the second composition being mixed to form the binder composition

28. A binder composition as claimed in claim 27 wherein the first composition comprises an aqueous-based silicate mixture containing from 15 to 50% silicate component, (by weight), with the balance being water and incidental impurities.
29. A binder composition as claimed in claim 28 wherein the first composition has a pH of greater than 10.7.
30. A binder composition as claimed in claim 27 wherein the second composition includes from 1% to 50%, by volume, of the one or more setting agents.
31. A binder composition as claimed in claim 30 wherein the second composition includes from 10% to 45% by volume, of the one or more setting agents.
32. A binder composition as claimed in claim 30 wherein the second composition includes from 12% to 40% by volume, of the one or more setting agents.
33. A binder composition as claimed in any one of claims 26 to 32 wherein the one or more setting agents are selected from one or more of organic/aliphatic esters or amides, glyoxal, acetates or acetins, dibasic esters, organic carbonates, alcohols, polyhydroxy alcohols, organic acids, acetic acid, formic acid and carbonic acid.
34. A binder composition as claimed in any one of claims 26 to 32 wherein the setting agent comprises an acetate and an organic carbonate, with the setting agent being present in the first composition in an amount of from 12-28% by volume.
35. A binder composition as claimed in any one of claims 27 to 34 wherein the second composition contains from 0.05% to 7% by volume of the one or more surfactants.
36. A binder composition as claimed in claim 35 wherein the second composition contains from 0.25% to 5% by volume of the one or more surfactants.
37. A binder composition as claimed in claim 36 wherein the second composition contains from 0.5 to 2% by volume of the one or more surfactants.

38. A binder composition as claimed in any one of claims 26 to 34 further including one or more further ingredients selected from colouring agents, biocides, fungicides, algaecides and pesticides.
- 5 39. A binder composition as claimed in any one of claims 27 to 38 wherein the binder composition is formed by mixing the first composition and the second composition and the binder composition comprises from 50% to 80% by volume of the first composition and from 20% to 50% by volume of the second composition.
40. A binder composition as claimed in any one of claims 26 to 39 wherein the binder composition has a setting time that falls within the range of 30 seconds to 30 minutes.
- 10 41. A binder composition as claimed in claim 40 wherein the binder composition has a setting time that falls within the range of from one minute to 20 minutes.
42. A binder composition as claimed in claim 40 wherein the binder composition has a setting time that falls within the range of from 8 minutes to 12 minutes.